

fundamental change. Here we may have the result of the perpetuation in an isolated community of a chance variation which would be disadvantageous on the surface, but in a cave may be an advantage because economical, and so it would be favoured by selection.

7. A cave is a natural laboratory where some of the variable factors in the outer world are under control.

Some creatures live on in them though they are no longer to be found outside. Indeed it seems to be a significant fact that at the limits of the region of dispersion of a group of animals the living forms are often only to be found in caves.

Careful collection and recording will in course of time shed much light on the course of evolution and on the places of origin of genera and their channels of distribution.

Ancient artificial caves, whether rock dwellings, temples or ancient mines, if of sufficient extent and humidity, and of known date may provide information of great value if their troglomorphic population is statistically examined in comparison with the same forms on the surface in the locality.

THE ORNITHOLOGICAL DIARY OF A VOYAGE OF S. S. *SAMLUZON*

ST. JOHN N.B. TO KARACHI, INDIA

4 June, 1945 to 7 July, 1945

BY

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Introduction

The observations contained in the following diary were made during a voyage of approximately five weeks duration, across the North Atlantic from St. John N.B. to Cape St. Vincent, then through the Mediterranean and Red Seas and up that part of the Indian Ocean known as the Arabian Sea from Aden to Karachi.

With the exception that we could not change her course, the *Samluzon* our ship, was practically our own. By the kindness of her Master, Captain Howe, and his Officers, we were permitted to go where we wished, at any time of the day or night, consequently we were able to spend many interesting hours on the bridge, in the bows or gazing over the stern, watching the many oceanic birds that crossed our path or crowded into our wake.

Conditions for the observance of bird-life were as good as they could be from ship-board, but even so, it must be remembered

when reading the following pages, that an element of uncertainty must always be present in identifications made by sight alone. There was no possibility of securing specimens to confirm identifications and, in some cases, especially with the petrels and to a lesser extent with the shearwaters, accurate identification 'in the field' or in this case 'in the ocean' is by no means easy. With the aid of a pair of 7 × 50 U. S. Navy MKI binoculars, or (when they were not available) a smaller pair of 6 × 24 Zeiss Sports field glasses, and with the assistance of the reference books listed at the end of this paper (some of which were available during the voyage), I have endeavoured to be as accurate as the circumstances permitted.

S. S. *Samluzon* is a Liberty ship of some 10,000 tons burthen. Her speed was normally a steady average 10 knots an hour, except while plunging into heavy, head-on seas, when, owing to being deeply laden, often several knots an hour were lost.

All times recorded are Sun times, according to the approximate position of the ship—that is to say, they are the 'apparent' time of the ship. Clocks were advanced at 17.00 hours, each evening, while we were steaming eastwards. The ship's position was fixed at mid-day each day, in accordance with the usual maritime procedure.

Owing to the voyage having taken place during the months of June and July when the vast majority of Northern Hemisphere birds are normally engaged in breeding and so are closely restricted, in range, to the vicinity of their nesting grounds, comparatively few land-birds were encountered and many species of sea-birds, so commonly to be seen during voyages at other seasons of the year, were conspicuous by their absence. No migrations were in progress, so only a few wandering land-birds were crossing the seas and, as the majority of gulls were in their Northern home waters, such harbours as Port Said and Suez, where during the winter months large numbers of Black-headed and other species congregate and do such useful work in scavenging the ship's refuse, were comparatively empty of bird-life, except for a few immature or non-breeding birds and those resident species that presumably breed somewhere in the vicinity.

These factors account for fewer birds having been observed, during this voyage, than would normally have been the case on a long sea voyage during any other season of the year. On the other hand, such observations that I was able to make have, I consider, a special value in that they were made at this particular time of the year when migration is in abeyance and most birds are normally restricted to their nesting areas. Except for a few vagrant land-birds (all of which would be either immature or non-breeding birds) and some of the oceanic forms, such as Wilson's Petrel (*Oceanites oceanicus*), which are reputed to breed in the Southern Hemisphere during the Northern Winter period, the great majority of the birds observed were, I think we are safe in presuming, within easy range of their breeding haunts. This factor adds greatly to the interest of this diary and presents a reasonable theory for the noticeable restriction of certain species observed, to certain very definite and comparatively small areas, in which they were present in large numbers while being totally absent from neighbouring areas.

DIARY

June 4, Monday. Saint John Harbour, N.B. Lat. $45^{\circ}14'$ N. Long. $66^{\circ}30'$ W.

Sailed at 18.30 hours. Wind cold, moderate from N. E.; snow reported on the hills, about 20 miles north, a few mornings previously.

Steaming down the harbour, past Partridge Island, the ship was accompanied by many Herring Gulls, presumably of the American race (*Larus argentatus smithsonianus*). On the wing, these gulls are very similar to the European race. The great majority of them were in full plumage, but here and there was an immature individual. No other species of gull was observed. The Herring Gulls were very numerous and acted as harbour scavengers, in the manner usual to gulls of the present day.

Except for the introduced European House Sparrows (*Passer domesticus*) and the semi-wild domestic pigeons, which were feeding on the quays and docks, the only birds seen in the harbour area were the Double-crested Cormorant (*Phalacrocorax auritus auritus*), and a single Black Crow (*Corvus brachyrhynchus*) which flew overhead, making towards the Northwest.

The Double-crested Cormorants were very numerous. In the morning and evening, fishing singly, they were to be seen on the harbour waters; later, flying in small flocks close above the water and again high over our mast tops. At low-water they congregated in groups, on the rocks and reefs exposed by the tide, generally sharing their retreats with many Herring Gulls.

June 5, Tuesday. N. Atlantic Lat. $43^{\circ}06'$ N. Long. $66^{\circ}12'$ W.

Sea moderate; breeze light, from N.E.; weather clear.

A few Herring Gulls followed the ship most of the day or were seen flying, lazily, some distance away. No other birds were observed.

June 6, Wednesday. N. Atlantic. Lat. $42^{\circ}01'$ N. Long. $61^{\circ}42'$ W.

Wind from N.E., strong to variable; sea rough with a heavy swell.

At 10.00 hours entered the waters of the Gulf Stream.

Many petrels appeared, mostly flying close above the sea, in no set direction; others followed our ship, flying more or less in the lee of our stern or to and fro across our wake; sometimes there were 20 or 30 wheeling around. All those that could be seen distinctly, appeared to be Wilson's Petrels (*Oceanites oceanicus*) and Leach's Petrels (*Oceanodroma leucorhoa leucorhoa*), Wilson's being much the more numerous. It is not easy to distinguish the various species of petrels in flight; Wilson's appears slightly smaller and darker than Leach's and the feet project well beyond the tip of the tail; they fly close over the water wheeling, twenty feet or more into the air. Several shearwaters, a little distance away from the ship, were wheeling close over the waves, in a similar manner to the petrels, but sometimes one would rise fifty feet or more into the air, and then sweep back to wave level. One, nearer than usual and seen clearly, had a black cap to the head with a light neck. Could it have been the rare Black-capped Petrel (*Pterodroma hasitata*)?

Several of the large shearwaters appeared to be the Greater Shearwater (*Puffinus gravis*) and one or two smaller and darker birds the Sooty Shearwater (*Puffinus griseus*), but visibility was not good and it was difficult to identify them. Our Captain calls petrels 'icebirds' and states that they are generally more numerous near icebergs and ice-fields. Many petrels were finding food in our wake, in the water churned up by the screw.

June 7, Thursday. N. Atlantic. Lat. $42^{\circ}02'$ N. Long. $56^{\circ}00'$ W.

In Gulf Stream. Wind moderate from S.W.; sea calmer but swell still heavy.

A few petrels and shearwaters seen during the day, but not nearly so plentiful as yesterday. Most petrels were dark sooty black with square tails and projecting feet—presumably Wilson's. Shearwaters were mostly too far

away for certain identification but they were all large and were, I think, the Greater Shearwater (*Puffinus gravis*).

June 8, Friday. N. Atlantic. Lat. $41^{\circ}41'$ N. Long. $50^{\circ}33'$ W.

In Gulf Stream. S. W. wind dropped; sea calmer but still a heavy swell.

Morning. Passed several petrels and shearwaters; the petrels all appeared to be Wilson's and the shearwaters to be Greater Shearwaters (*Puffinus gravis*).

15.00 Hours.—Four Greater Shearwaters (*Puffinus gravis*), together and one, decidedly greyer, near the bows of the ship. The latter undoubtedly a North Atlantic Greater Shearwater (*Puffinus kuhlii borealis*). It was lighter and greyer than *Puffinus gravis* and possibly rather larger.

15.10 Hours.—I saw a bird, about a hundred yards from the starboard bow, which I was unable to identify; head, neck and underparts were white and the back was mottled blackish and white; the tail appeared to be short; the flight was rather quick; it looked somewhat like a Tropic Bird, many of which I have seen in the Indian Ocean. Many petrels passed at some distance.

June 9, Saturday. N. Atlantic. Lat. $41^{\circ}34'$ N. Long. $41^{\circ}5'$ W.

In Gulf Stream. Wind W. to N.W.; sea almost calm but slight swell continues; sunny in morning, with light cloud later.

All day, we saw only three shearwaters, all too far away for accurate determination; they were large and dark and were, most probably, the Greater Shearwater (*Puffinus gravis*).

June 10, Sunday. N. Atlantic. Lat. $41^{\circ}59'$ N. Long. $39^{\circ}30'$ W.

In Gulf Stream. Wind W. to N.W.; sea almost calm but slight Swell continues.

9.15 Hours. Five, later increased to eight or nine, shearwaters were flying round our bows, in open order; they were dark brown above, rather dingy white beneath; they were all, I think, the Greater Shearwater (*Puffinus gravis*). Later, two others appeared on the port side; they appeared similar in size but were definitely greyer on the upper parts. These, I take to be, the North Atlantic Great Shearwater (*Puffinus kuhlii borealis*).

11.00 Hours. Another eight or nine shearwaters have appeared flying in pairs, in a loose flock, crossing and recrossing close to our bows; they are large and brown and are undoubtedly *Puffinus gravis*; possibly the same birds we saw about 9.15 hours today.

Three petrels have followed our wake this morning; at 15.00 hours one is still with us. These petrels fly close over the water, back and forth across our wake; they evidently find food in the churned-up water. They all appear to be Wilson's Petrel (*Oceanites oceanicus*) with unforked, square tails and projecting feet.

16.00 Hours. Only one petrel was following the ship but at 18.00 hours there were eleven or twelve; they all appeared to be Wilson's Petrels. No shearwaters seen after mid-day.

June 11, Monday. N. Atlantic. Lat. $40^{\circ}29'$ N. Long. $34^{\circ}00'$ W.

Wind E.; light; slight swell.

8.30 Hours. Two petrels flying in our wake; several others passed during the morning; they were all Wilson's. A flock of nine or ten shearwaters were flying round our bows at 09.45 hours; they all appeared to be *Puffinus kuhlii borealis*. Several shoals of dolphins were passed during the morning.

10.15 Hours. A small shearwater appeared on the port side. It was blackish above and white below, like the Manx Shearwater (*Puffinus puffinus*), great numbers of which I saw in the Irish Sea in March last. This shearwater, I take to be the Madeiran Little Shearwater (*Puffinus assimilis baroli*) as the Manx would not be so far south at this time of the

year. No petrels seen after mid-day. Probably most of them have remained in the warmer waters of the Gulf Stream; we have now almost passed out of the southern edge of this current.

Afternoon.—A few shearwaters flew in large circles around the ship. They seem to enjoy flying back and forth close over our bow, down one side of the ship, across our wake and up the other side, generally keeping at some distance from the ship and wheeling around, first one way and then the other, as they circle. They are, I think, all North Atlantic Great Shearwaters (*Puffinus kuhlii borealis*), with rather mottled, whitish underparts. They did not appear to pick up any food. *Note.*—I have seen hundreds of shearwaters, of many species, at sea but I have yet to see one feeding by day.

June 12, Tuesday. N. Atlantic. Lat. 39°56' N. Long. 28°44' W.

Approx: 25 miles N. of Corvo Island, Azores.

Wind moderate from N.E.; swell continues; fine but cloudy.

7.15 *Hours.* Heard shrill cries of terns and, on going out, found two Arctic Terns (*Sterna paradisaea*) flying close above and hovering over our ship, screaming loudly; one settled, for a few seconds, on the top of the flag-pole in our bows. After half an hour they flew off in a northerly direction, flying rapidly close above the waves; presumably they were on migration.

Four or five petrels (Wilson's as far as could be seen) were following in our wake. Four, possibly two pairs, flew off towards the N.E. at about 09.15 hours. Many shearwaters are circling the ship; several passed close under our stern, making identification almost certain; all were *Puffinus kuhlii borealis*.

10.00 *Hours.* A single petrel following our wake; soon after, another, then another, arrived, until four were sailing back and forth across our wash, occasionally settling to pick up minute particles of food. One, slightly larger and browner than the others, was Leach's (*Oceanodroma leucorhoa leucorhoa*), I think; the other three were Wilson's. All petrels seen so far (a very great number) appear to belong to these two species (*Oceanodroma leucorhoa leucorhoa* and *Oceanites oceanicus*, the great majority being Wilson's recognizable by their squarish tails and long legs. It is, however, exceedingly difficult to distinguish these very similarly marked petrels when they are flying to and fro at a little distance from the ship. Some of those seen in our wake, during the last few days, may, very possibly, have been the Madeiran Fork-tailed Petrel (*Oceanodroma castro*).

Afternoon.—About 50 miles from the Azores; N.E. wind freshening; sun shining.

Very few birds; no petrels, but several shearwaters (*Puffinus kuhlii borealis*) sweeping over the waves, the sun glistening on their whitish underparts as they wheel and turn.

18.00 *Hours.* While watching Great Shearwaters (*Puffinus kuhlii borealis*), I saw a smallish dark-coloured bird, which I am unable to identify with certainty; size and flight were very similar to the Manx Shearwater (*Puffinus puffinus*) but, in the evening light, the bird looked unicoloured, dark blackish brown both on the underparts as well as on the upper. No white could be seen; wings were pointed and shaped like a shearwater; build was rather light; obviously it was a shearwater or closely allied species; possibly it was the rare Bulwer's Petrel (*Bulweria bulwerii*) the description of which seems to fit it. Wind now freshening to gale-force; waves are white-capped and are coming inboard over our bows. No petrels in sight but a number of Larger Shearwaters (*Puffinus kuhlii borealis*) are sweeping low over the waves.

June 13, Wednesday. N. Atlantic. Lat. 39°27' N. Long. 24°09' W.

Strong wind from N.; sea rough; swell moderate; fine and sunny.

No petrels; all appear to have remained in the warmer waters of Gulf Stream, where food is probably more plentiful. With the exception of an occasional Great Shearwater (*Puffinus kuhlii borealis*) no birds were seen all day.

June 14, Thursday. N. Atlantic. Lat. 38°53 N. Long. 20°31 W.

Strong wind from E.N.E.; sea rough with heavy swell; cloudy but fine.

No birds until 09.10 hours when a Turtle Dove (*Streptopelia turtur*) flew round the ship and attempted to settle but the strong wind prevented it from doing so. The nearest land, the Azores, is about 215 miles to the S. W., in which direction the dove eventually disappeared, flying low over the waves and much buffeted by the wind. The Portuguese coast is now about 530 miles N.E.; the wind is strong from E.N.E. so the dove may have been blown from there.

Later, a single Large Shearwater (*Puffinus kuhlii borealis*) crossed our bows and the 3rd Officer reported seeing three petrels, in the trough of a wave, about mid-day.

18.15 Hours. Another solitary shearwater (*Puffinus kuhlii borealis*) passed, flying in a S.W. direction.

June 15, Friday. N. Atlantic. Lat. 38°66 N. Long. 17°18 W.

N.N.E. wind, which reached gale force during the night, is now moderating; heavy swell; cloudy but fine and clear. Speed reduced to about 7 knots.

No birds seen all day. Chief Officer reported having seen a single shearwater about 17.00 hours.

June 16, Saturday. N. Atlantic. Lat. 37°28 N. Long. 13°17 W.

N.N.E. wind moderating; sea and swell considerably less.

No birds seen during the early morning.

09.55 Hours. A single shearwater, in the distance, wheeling over the waves, its whitish underparts glistening in the sun. No more birds until 18.15 Hours when a solitary shearwater (*Puffinus kuhlii borealis*) flew round our bows for several minutes and then disappeared south.

18.30 Hours. Passed two shearwaters (*Puffinus kuhlii borealis*) and later, several more appeared; one had a flight feather missing; possibly it was in moult.

One small, dark brown and white shearwater, too indistinct for certain determination, was probably a Western Mediterranean Shearwater (*Puffinus puffinus mauritanicus*) as it did not appear dark enough for the typical form. The decrease in oceanic bird-life since leaving the Gull Stream is very notable.

June 17, Sunday. N. Atlantic. Lat. 36°40 N. Long. 8°10 W.

Calm sea; no swell; light breeze E.N.E. to E.S.E.

About 07.00 Hours, approximately 12 miles N.W. of Cape St. Vincent, sighted an immature Gannet (*Sula bassana*) in brown plumage gliding and flapping towards us. A few minutes later a Turtle Dove (*Streptopelia turtur*) flew close to the ship and continued N.E. towards the land; it was flying strongly.

About 07.15 Hours. A flock of nine small terns passed, flying close over the sea; they were too far away for determination of the species.

Four Wilson's Petrels (*Oceanites oceanicus*) are now accompanying us, flying to and fro across our wake; they left us as we approached close to land.

Between 07.50 and 08.30 Hours. Drawing close to Cape St. Vincent, Gannets (*Sula bassana*) appeared in small numbers, flying in different directions or swimming on the calm sea; in some of them the fore parts (including neck, head and chest) were white, but in the majority the plumage was chiefly chocolate brown. Many Herring Gulls are also flying round, sitting on the ledges of the cliff or swimming in the water; one or two have followed our wake for some distance; they are the Mediterranean Yellow-Legged Herring Gull (*Larus argentatus cachimans*). All are fully adult and are, most probably, nesting on the ledges of the Cape; no nests can be distinguished, with certainty, but several Herring Gulls are settled on the ledges and appear to be on their nests. At a little distance, we saw several small flocks (six or seven) and a number of pairs of a small shearwater; they were all flying, close over water, in the opposite direction to the ship's course—i.e. towards the Cape; they did not wheel about looking for food but flew as with a definite purpose; possibly

they were returning to their nesting burrows; they are considerably smaller than *Puffinus kuhlii borealis* and are dark brown above with whitish underparts; most probably they are the Western Mediterranean Shearwater (*Puffinus puffinus mauretanicus*).

An hour after passing the Cape (09.00 Hours) we commenced to flush a few large flying-fish, from under our bows; all birds have disappeared.

10.00 Hours. Five large shearwaters appeared 500 yards off and accompanied the ship for a few minutes; they then settled on the calm sea-surface in a close flock; they appeared to be Mediterranean race of the Great Shearwater (*Puffinus kuhlii kuhlii*). One petrel (Wilson's) flew round the ship.

10.15 Hours. Another Turtle Dove (*Streptopelia turtur*) flew close over the ship and continued northward towards a schooner in the near distance. A few minutes later two more Turtle Doves appeared, flew close over the ship and made off northwards, in the same direction as the first. Land is now approximately 20 miles away to the North. The African (Moroccan) Coast is about 40 miles to the south; apparently the Turtle Doves are passing from Africa to Spain; but why should they do so at this time of year?

10.20 Hours. A flock of eight or nine petrels are flying and feeding close over the water in the wake of a ship that passed about half an hour ago. All are Wilson's (*Oceanites oceanicus*); eight Herring Gulls (*Larus argentatus cachimans*) following the wake of a Portuguese motor ship, half a mile to the north; later all flew away N. Two gannets (immature brown plumage) crossed our bows, flying low over the water and disappeared southwards, at 10.30 hours. Another, in almost adult plumage, passed soon afterwards.

11.00 Hours. Six petrels in our wake, closer than usual; all have the squarish tail and long legs—characteristics of Wilson's Petrel. I did not know that *Oceanites oceanicus* is so plentiful in these waters and in the N. Atlantic; I have seen hundreds this voyage.

11.20 Hours. Two large brown shearwaters crossed close to our bows—undoubtedly the Mediterranean race (*Puffinus kuhlii kuhlii*); several petrels are also with us.

13.15 Hours. A gannet (immature brown plumage) flew in towards us and sheared off when quite close. All afternoon, thirty or forty petrels have been in our wake—some flying fairly close—all are Wilson's (*Oceanites oceanicus*) which species has been very much the most common since leaving St. John. In flight, tips of the toes project a quarter to half an inch beyond the squarish tail. In many individuals, the feathers—especially the flight feathers—are much worn. The moult is now on, I think. These petrels feed largely on the refuse thrown over from the ship. Their behaviour is very similar to that of gulls, following in the wake of a ship. As soon as edible refuse is thrown overboard a dozen or more congregate at the spot, some paddling and picking up food, others alighting on the water, still others wheeling round; there is much flapping of wings and scrambling for the food. Some of these petrels follow the ship for many miles, occasionally dropping back a few hundred yards, then flying quickly to catch up again until close to the stern; they always fly to and fro across the wake, searching for food.

16.00 Hours. Still thirty or forty petrels in our wake and others flying around—all Wilson's. Passed one gannet (immature, brown) and a small number of Mediterranean Shearwaters (*Puffinus kuhlii kuhlii*), generally in pairs. A large shoal of blackfish passed at 16.10 hours and several dolphins and porpoises have also been seen.

16.15 Hours. A Common Swift (*Apus apus*) has appeared, flying from S. to N.; it is finding considerable difficulty in making headway against the stiff breeze that has sprung up during the last hour. It flew high above the masts, then down close to the waves in the lee of the ship. I had this swift and two Wilson's Petrels in the field of view of my field glasses, at the same time. The African coast is now about sixty miles to the south; the Spanish coast forty miles to north; the swift is apparently crossing from Africa to Europe. During the evening a number of shearwaters and petrels were round the ship but not so many petrels were in our wake as earlier in the day. The number of petrels with us is now declining gradually as the evening closes in; at 19.30 hours only one was left; at 19.45 hours there were none and no birds of any description were to be seen from the ship.

June 18, Monday. Western Mediterranean. Lat. 35°42' N. Long. 2°55' W.

Sea calm; no wind; sky overcast and rain falling; cleared 10.00 hours.

07.30 Hours. Fifteen to twenty petrels, all Wilson's, are now in our wake; by 09.00 hours the numbers had increased to approximately twenty to twenty-five; all are of one species. No other birds seen.

10.00 Hours. A single shearwater (*Puffinus kuhlii kuhlii*) passed. Many petrels are still in our wake.

11.15 Hours. A small lark-like bird was glimpsed flying along our star-board side; it was seen only for a few minutes before it disappeared. It appeared to be a Common Skylark but this identification is uncertain. We are now about fifteen miles north of the Moroccan Coast. Many Wilson's Petrels are still with us.

14.30 Hours. When we were forty to fifty miles from the Moroccan Coast, a large gull came from the south, circled several times and flew off towards the S.E., it appeared to be Herring Gull; later, it reappeared accompanied by two others; one settled on the water and the others dropped astern—they did not come close enough to us for certain identification but they appeared to be Herring Gulls.

15.00 to 15.30 Hours. Passed several schools of dolphins and one pair and a single Green Turtle; the pair were mating on the surface.

15.30 Hours. There are still about twelve Wilson's Petrels in our wake.

15.45 Hours. A small brownish bird flew on to the forward hatch and remained there; on examination with field-glasses, it proved to be bunting—very like, if not identical with the Corn Bunting (*Emberiza calandra*). On closer approach it disappeared over the side and was not seen again.

16.15 Hours. Another large gull appeared and between 17.30 and 20.00 Hours there was always at least one and sometimes up to five following in our wake, with the petrels. All are typical Yellow-legged Herring Gulls (*Larus argentatus cachinnans*) in full plumage; yellow feet and yellow bills, with red spot, are very distinctive. At dusk (about 20.00 Hours) there are still a few Wilson's Petrels and one or two Herring Gulls in our wake; our position is approximately seven miles from land and thirty miles W. of Oran.

June 19, Tuesday. Western Mediterranean. Lat. 36°47' N. Long. 2°27' E.

Seven to ten miles from Algerian Coast. Sea calm; wind very light and variable; sunny.

05.30 Hours. Many Herring Gulls are still accompanying the ship, circling round, following in our wake and settling on the sea alongside.

05.45 Hours. Three Mediterranean Shearwaters (*Puffinus kuhlii kuhlii*) passed flying close above the water; no petrels are with us.

About 07.30 Hours. One or two petrels have appeared in our wake; by 09.15 Hours the number had increased to twelve. Herring Gulls are very numerous, circling the ship.

09.30 Hours. A Mediterranean Greater Shearwater crossed our wake flying north; fifteen Herring Gulls and twelve Wilson's Petrels are in our wake; all the Herring Gulls are in mature plumage.

14.00 Hours. Passing within two miles of Cape Caxine, immediately north of Algiers, a small number of Mediterranean Shearwaters were in sight, several of them between the ship and the shore. All Herring Gulls and petrels have now left us. We started to pick up the petrels again as soon as we were nine or ten miles from land.

15.45 Hours. Three petrels are now in our wake, occasionally settling on the smooth water to feed. Considerable numbers of Mediterranean Shearwaters were in sight while we were passing Algiers, flying close to the ship or settling on the water, but fewer are to be seen now we have left the in-shore waters.

16.00 Hours. No shearwaters or Herring Gulls are in sight; only three petrels flying in our wake.

16.10 Hours. Eight shearwaters, in a small flock, settled on the water fairly close to the ship.

17.45 Hours. Petrels have disappeared but five Herring Gulls are in our wake; four are in mature plumage but one is a juvenile.

18.15 *Hours.* A single petrel, following in our wake, had left us by 18.30 hours.

18.45 *Hours.* Passed an unusual dolphin; it seemed to be about twelve to fifteen feet in length with a blunt head (like a Black Fish) and small dorsal fin; colour irregularly skewbald, black-brown and whitish all over; owing to its light colour, it could be seen swimming, solitarily, just below the surface, for some considerable distance.

19.00 *Hours.* Several Herring Gulls circling the ship.

No other birds to be seen.

June 20, *Wednesday.* Western Mediterranean. Lat. $37^{\circ}10'$ N. Long. $7^{\circ}55'$ E.

Sea calm with slight swell; light, variable breeze.

06.00 *Hours.* Many Herring Gulls circling the ship, searching our wake and settling alongside. No other birds.

08.45 *Hours.* Passing near Cape de Fer, several Mediterranean Shearwaters (*Puffinus kuhlii kuhlii*) are flying close over the water. Forty to fifty Herring Gulls (*Larus argentatus cachinnans*) came out and circled the ship; all in adult plumage. Does this gull nest on Cape de Fer? Still no petrels.

09.45 *Hours.* A small shearwater crossed our wake; it was considerably smaller than *Puffinus kuhlii kuhlii*; brown above, whitish below; it flew straight, a few feet above water, with rapid wing beats; it is the first of this species that we have seen in the Mediterranean proper; I believe that it is a Small Mediterranean Shearwater (*Puffinus puffinus yelkouan*) but it was too indistinct for accurate identification. Several Large Shearwaters (*Puffinus kuhlii kuhlii*) are flying about. I notice that, while gulls and petrels feed in the wake of the ship, shearwaters never do.

10.00 *Hours.* Just before A. A. gun practice, a small number of shearwaters (*Puffinus kuhlii kuhlii*) and fifty to sixty Herring Gulls were near the ship. All disappeared as soon as the guns opened up.

10.20 *Hours.* Herring Gulls have begun to reappear and with them several Slender-billed Gulls (*Larus genei*); the first we have seen this voyage. This gull is smaller than the Herring Gull; pure white with a light-grey mantle and the primaries tipped black and white; bill is dark red, more red in some than in others; feet and legs are dark red; several are wheeling round the ship with the Herring Gulls.

10.45 *Hours.* A solitary petrel crossed our wake; the ship is now about ten miles from African coast. Herring Gulls and Slender-billed Gulls are circling us in about equal numbers. No shearwaters are to be seen.

14.15 *Hours.* Gulls are now all Herring Gulls; we appear to have left behind us the territory of the Slender-billed Gull. Did they come from a nesting colony, on the coast near here? We are still only twenty miles off shore. Several Large Shearwaters (*Puffinus kuhlii kuhlii*) are always in sight; seven crossed our bows in a small flock, wheeling and flapping lazily.

14.30 *Hours.* Another Small Shearwater (*Puffinus puffinus yelkouan*) crossed our bows flying S.W.; it is darker brown above than in *Puffinus kuhlii kuhlii*, with a greyish shade to the neck and mantle but without the whitish rump and blackish tips to the tail feathers; white or whitish beneath; it flies much straighter and more rapidly than *Puffinus kuhlii kuhlii*, without any wheeling and slow flaps.

14.50 *Hours.* A Common Swallow (*Hirundo rustica*) flew the length of the ship, at mast height, and then on towards the African coast, about twenty miles away; a male in full plumage. It is curious that a swallow should be going south in the middle of June! Presumably it is a non-breeding wanderer.

15.45 *Hours.* A Slender-billed Gull appeared, with several Herring Gulls, and accompanied the ship; the gulls fly about half a mile ahead, settle on the water, wait for the ship to pass them, drop a mile or two astern and then fly up and overtake the ship again, repeating this procedure for several hours. If refuse is thrown over, all congregate to feed in the wake. Many shearwaters (*Puffinus kuhlii kuhlii*) but no petrels are in sight.

16.10 *Hours.* A Herring Gull, in immature plumage, joined the others, all in full plumage, accompanying the ship.

16.30 Hours. The coast is now approximately 7 miles due south; we passed another small shearwater (*Puffinus puffinus yelkouan*) wheeling rapidly over the water; it looked very black and white in the afternoon light.

18.00 Hours. Two petrels in our wake, together with many Herring Gulls; a few shearwaters (*Puffinus kuhlii kuhlii*) are also in sight.

18.30 Hours. Passing the Fratelli Rocks, three miles to southward, a single petrel was flying in our wake; it appeared to be Wilson's (*Oceanites oceanicus*); many Herring Gulls and a few shearwaters (*Puffinus kuhlii kuhlii*) are still to be seen.

June 21, Thursday. Western Mediterranean. Lat. 36°52 N. Long. 13°04 E.

Sea calmer; swell slight; wind light from E.S.E. to S.E.; bright and sunny. 06.30 to 07.30 Hours. Passing close to Pantellaria Island, two Herring Gulls came out and accompanied the ship, for about half an hour.

08.30 Hours. A solitary petrel in our wake; too far away for determination; no gulls or shearwaters in sight.

09.05 Hours. A Turtle Dove settled on our fore-hatch; it appeared, after close examination through glasses, to be a Common Turtle Dove (*Streptopelia turtur turtur*); it remained on board for several hours before disappearing. Later several petrels appeared in our wake.

12.45 Hours. Six petrels, all darker and more definitely sooty-black and with shorter legs than the familiar Wilson's Petrel (*Oceanites oceanicus*) have appeared in our wake; their flight and behaviour is very similar to Wilson's; tail squarish but slightly forked. I think that they must be the Storm Petrel (*Hydrobates pelagicus*)—a resident in this part of the Mediterranean.

Sicily is now looming up about thirty miles to northward.

14.15 Hours. All the petrels have disappeared; only one Herring Gull is with us. Petrels reappeared in our wake at about 14.30 hours; at about 16.40 hours there were six of them following us. Passed another Small Shearwater (*Puffinus puffinus yelkouan*) flying towards Gozo Island.

18.00 Hours. Passing through the Malta Channel, six Storm Petrels (*Hydrobates pelagicus*) still in our wake and one Large Shearwater (*Puffinus kuhlii kuhlii*): No gulls.

19.00 Hours. Near Malta, several Large Shearwaters (*Puffinus kuhlii kuhlii*) and two petrels were in our wake. Two large swordfish leaped several feet out of water.

19.30 Hours. Another small shearwater (*Puffinus puffinus yelkouan*) crossed our path flying towards Malta; also several *Puffinus kuhlii kuhlii* and Storm Petrels (*Hydrobates pelagicus*) were flying round us and in our wake until dusk.

June 22, Friday. Eastern Mediterranean. Lat. 33°47 N. Long. 18°11 E.

Sea very calm with slight ripples but no swell; light breeze from N. E.; sunny.

No signs of any bird-life until 10.10 hours when a single Storm Petrel (*Hydrobates pelagicus*) was seen.

10.30 Hours. Two petrels in our wake but they soon disappeared. No further bird-life observed until the evening.

17.30 Hours. A medium-sized warbler came aboard to rest; could not obtain a satisfactory view of it owing to the difficult light and to its constant movement. It appeared to be a dark olive-brown above and a light yellowish-grey on the underparts. It was, I think, a member of the genus *Hypolais*—possibly *H. pallida*, the Olivaceous Warbler. It was very restless and difficult to approach; eventually it retired to roost under the cross-trees of the main mast. The nearest land, Tripolitania, is now about two hundred miles to the S.E.

June 23, Saturday. Eastern Mediterranean. Lat. 32°50 N. Long. 22°47 E.

Sea calm; light breeze from N. W.; bright and sunny.

05.30 Hours. Another Turtle Dove (*Streptopelia turtur*) settled on our port bulwark, aft, and remained, preening itself; it continued with us until 07.00 hours. No petrels or any other birds were seen until 10.30 hours when a

solitary Great Shearwater (*Puffinus kuhlii kuhlii*) crossed our bows flying towards the land now about ten miles distant to southward.

11.10 *Hours*. A large gull flying in the distance; it appears to be a Herring Gull moving in the direction of Derna, about seven miles to the south. There seem to be very few birds in this part of the Mediterranean; not nearly so many as in Western part.

16.30 *Hours*. When about sixteen miles from land, we put up a Small Shearwater from the water, ahead of our bows. It was sleeping, when first seen, and allowed the ship to approach closely; on awakening it flew off with rapid wing-beats, followed by wheeling glides; in colour it was dark brown, white or nearly white on the chest and underparts; undoubtedly it was a Small Mediterranean Shearwater (*Puffinus puffinus yelkouan*). No other birds were seen during the whole day. This part of Eastern Mediterranean is very deficient in bird life, at this time of year. Apparently there is less marine life too, as we have seen no dolphins or porpoises either; small flying fishes are, however, quite plentiful.

June 24, *Sunday*. Eastern Mediterranean. Lat. 35°57' N. Long. 27°53' E.

Sea calm; slight breeze from N. to N.W.; bright and sunny all day.

No bird-life at all, with the exception that the Third Officer reported seeing a Common Swallow (*Hirundo rustica*) flying over the ship during breakfast time, at about 08.30 hours.

18.30 *Hours*. When we were about sixty miles from land (the Nile Delta) another Common Swallow (*Hirundo rustica*) appeared circling the ship and attempting to settle; it was a female, in rather worn plumage and appeared tired out; eventually it settled to roost on the gun platform in our stern. This is the third swallow that has come aboard while we have been passing through the Mediterranean. The absence of bird-life, all day, has been most marked.

June 25, *Monday*. Port Said. Arrived at Port Said about 11.45 hours.

Sea calm; slight breeze from N.; bright, sunny and clear.

At 10.00 *Hours* a Common Swallow (*Hirundo rustica*) was brought to me in an exhausted condition; it is probably the one that came aboard last night. It died before it could be released near land. The first gull to meet us, as we neared port, was a Herring Gull in immature plumage, just changing to adult; it flew round us when we were about three miles from Port Said.

11.45 *Hours*. Entering the harbour, a small number of Little Terns (*Sterna albifrons*) could be seen fishing along the southern breakwater. Presumably, they would be of the typical race *albifrons*. One or two Black-headed Gulls (*Larus ridibundus*) flew round us but they were very scarce. A large tern, with a black cap, very like if not certainly, the Gull-billed Tern (*Gelochelidon n. nilotica*) was flying with an immature tern of probably the same species. There were also several immature gulls which were probably all Herring Gulls. A small number of Common Swallows (*Hirundo rustica*) were flying over the inner harbour.

While lying at our fueling berth, in the entrance to the Suez Canal, two Slender-billed Gulls (*Larus genei*) passed over us. There are remarkably few gulls or terns in the harbour—the large numbers (chiefly of Black-headed Gulls (*Larus ridibundus*)) seen by me in March last are entirely absent. About 16.30 *Hours*, when it became cooler, a few more gulls appeared, nearly all immature. One seen closely was an immature Herring Gull; others seen in the distance may have been of a smaller species. Other species of birds observed in the harbour area, were:—

- (1) Egyptian Kites (*Milvus migrans aegyptius*)
- (2) Crows (*Corvus* sp.)
- (3) Sparrows (*Passer domesticus niloticus*)
- (4) A number of Little Terns (*Sterna a. albifrons*) and
- (5) A few Common Swallows (*Hirundo rustica*).

At 17.45 *Hours*, a fine Black-backed Gull (*Larus marinus*), in fully adult plumage, circled over the ship, closely. One or two of the immature gulls in the distance may also have been of this or of the smaller species. In the lagoon, several miles to the north-eastwards, a small party of nine to twelve Flamingoes (*Phoenicopterus ruber antiquorum*) can be distinguished; in March

last there were hundreds (if not thousands) of flamingoes in this lagoon. We left Port Said and entered the Canal at dusk.

June 26, Tuesday. Gulf of Suez. Lat. 29°27' N. Long. 32°35' E.

Slight breeze from W. and N.W. Bright and sunny.

At 05.45 Hours, near El Chulaf, a Canal Station about 20 miles from Suez, we saw the first Egyptian Brown or White-eyed Gull (*Larus leucophthalmus*) a solitary bird. Soon afterwards, however, a flock of about 30 passed us flying low, westwards, up the Canal. Other flocks and solitary birds were seen, commonly, as we approached Suez. White Cattle Egrets (*Bubulcus ibis ibis*) were feeding in some of the Canal-side, irrigated fields. A pair of Pied Kingfishers (*Ceryle rudis rudis*) hovered over the water close by and Crested Larks (*Galerida cristata nigricans*) were singing on the mounds of soil, beside the Canal. In a lagoon near Suez Town, a giant wader—either a large stork or a giant heron was standing; it was blackish all over, with reddish or pinkish legs as far as could be distinguished but it was too far away to be seen plainly; it appeared twice the size of a Grey Heron (*Ardea cinerea cinerea*) which was standing near it. Leaving the Canal and steaming to our anchorage in Suez Bay, a large sooty-brown skua flew fairly close to us and settled on the water, amongst a party of Brown Gulls (*Larus leucophthalmus*). In colour, it was sooty-brown all over, with the cap very little darker than the remainder of the head and underparts very little lighter than the upper parts. The two central tail feathers projected some four or five inches beyond the remainder and were twisted from the horizontal to the vertical. This would appear to be the dark form of the Pomatorhine Skua or Jaeger (*Stercorarius pomarinus*). Hundreds of Brown Gulls, in Suez roadstead, were in small and large parties, sitting on the water or seeking their food amongst the refuse from the ships. No other species of gulls could be seen.

At 09.30 Hours, as we were leaving Suez anchorage, however, a lesser Black-backed Gull (*Larus fuscus*), in adult plumage, was seen flying towards the cliffs and two immature gulls, probably of the same species, or young Herring Gulls, were circling a large warship. As we cleared the other shipping, in the outer anchorage, a party of five large dark birds were on the water; they flew off at our approach and seemed to be skuas; the middle feathers of the tail, appeared to project considerably but we were not close enough for a satisfactory view. In colour they were dark, sooty brown above and whitish below—wings long and pointed. Would any species of skua be in these waters, in small flocks, at this time of the year?

At 10.45 Hours, when we were 12 to 13 miles from Suez we passed a flock of about a dozen Brown Gulls (*Larus leucophthalmus*) accompanied by two skuas; the Brown Gulls rose and followed the ship but the skuas disappeared. All the Brown Gulls were in adult plumage. Do they breed in this vicinity?

11.15 Hours. Amongst the small party of Brown Gulls, accompanying the ship, was an immature bird, with black-tipped tail and smoky brown plumage. Between 17.30 and 18.15 hours, many large terns passed us, flying from the direction of Ras Gahrib, towards the Sinai coast; they were mostly in pairs and flew close over the water, occasionally rising 20 feet or more into the air and plunging down into the sea; they seemed to be largish sea terns, pure white, with the exception of a light-grey mantle; tail long and forked; beak red; head may have had a black cap, but it could not be distinguished accurately. I think that they were Lesser Crested Terns (*Thalasseus bengalensis*). A few Brown Gulls continued to accompany the ship all day, flying close above our stern or in our wake.

June 27, Wednesday. Red Sea. Lat. 25°47' N. Long. 35°12' E.

Slight sea; fresh breeze from N.W.W. to E. and S.S.E. Bright, sunny but cool.

05.00 Hours. No birds seen during the early morning, but as the sun rose, four Brown Gulls appeared and, soon afterwards, a dozen were with us. They were very tame. They appear to follow ships down the Red Sea, sleep on the water and then to join other ships going up and return to Suez; they feed on the refuse in the wakes of the ships.

08.00 *Hours*. Passing the Brothers Islands, at about 2 miles, distance, 30 to 40 Brown Gulls, all in adult plumage, joined the ship. Do these gulls nest on these Islands? They are very plentiful in the vicinity. A large, sooty-brown bird, with whitish underparts and a longish pointed tail, passed near us—a skua of some species, I think; probably the Arctic Skua (*S. parasiticus*).

By 09.30 *Hours* when the Brothers Islands had just disappeared out of sight, astern, the Brown Gulls had thinned out considerably; they are evidently loath to leave the vicinity of the Islands. By 13.00 hours all had disappeared.

At 14.15 *Hours* two Brown Gulls appeared, one adult and one immature, with completely brown mantle with no white hind margin; white tail black-tipped; beak greenish.

14.00 *Hours*. Some seabirds, some distance away, appeared to be brown above, whitish below with tails longish and sharp pointed. Several more of the same species were in the far distance; later a small flock of seven of these birds passed a few hundred yards from the ship; the tail is forked; the head is black-capped and the upper plumage, including the tail, is dark earthy brown; primaries blackish; the neck is lighter and the underparts are whitish; the beak dark;—this is evidently the Red Sea Brown-winged Tern (*Sterna anaetheta fuligula*).

15.30 *Hours*. Three more Brown-winged Terns passed; all flying N. W. close over the water.

15.50 *Hours*. Another 5 Brown-winged Terns were flying in the same direction. No Brown Gulls were seen after 15.20 hours but several parties and pairs of Brown-winged Terns passed just before dusk.

June 28, Thursday. Red Sea. Lat. 21°59. Long. 37°41 E.

Sea calm; slight breeze from S; bright, sunny and clear. No birds at all were seen between sunrise (about 05.00 hours) and 11.00 hours.

At 11.05 *Hours*, 5 petrels were in our wake; they were largish, dark sooty-black with a distinctly lighter pattern across the wings; the rump was white; the feet were longer than the squarish tails, the toes projecting half inch or so; these petrels appear to be of the same species that we saw, so commonly, in the Atlantic and in the Western Mediterranean, i.e. Wilson's Petrel (*Oceanites oceanicus*).

At 11.20 *Hours*, 4 Aden Sooty Gulls (*Larus hemprichi*) passed us flying close over the water towards Gebel Asetariba on the African shore. They were all immature; the tails were pure white and the margins of the sooty-brown wings were also white.

At 11.30 *Hours*, a fine young Peregrine Falcon (*Falco peregrinus*) came aboard, flying in from the Arabian Coast. After circling the ship for some minutes it took up a commanding position on the top of the aftermast, where it remained for a considerable time. It was, I feel certain, a ♀ in immature plumage—probably a this year's bird; back, wings and tail were dark rufescent brown, darker and more brown than (but marked rather like) a European Kestrel; breast light fawn, lighter on the chest, darker on the abdomen and lighter again towards the vent, striped with interrupted wavy, longitudinal dark brown or blackish streaks; throat and foreneck light, yellowish white or whitish fawn; crown of head dark brown, deepening to blackish on the sides and black moustachial stripe well marked; hind neck spotted or streaked with dark brown on light fawn; beak dark brown with light yellow cere; eyes dark, with bright bluish lids; tarsus and feet light greenish yellow; lower abdomen light fawn; size about that of a smallish Carrion-Crow (*Crocyne corone*).

After remaining on the aftermast until about 14.50 hours, it tried a number of alternate perches and eventually settled down again, in the shade, on the top of a big ventilator, forwards, where an excellent view of it was obtained. The wings were dark, dull lead or slate-brown with the feathers edged with light-reddish brown; the tail was the same colour as the body, but closely barred with reddish brown, with the tips of the feathers light. Head was dark brown at the sides, with the back of the crown bright golden purplish-brown and the fore-head light brown; the thighs were bright fawn, slightly spotted near the body, when flying this falcon gives the impression of being

dark brown above, with the tail barred and the underparts also closely barred. It left us about 15.00 hours.

Between 15.00 and 15.15 Hours, we passed through areas of the reddish plankton from which the Red Sea takes its name—also we passed vast numbers of small purple jelly fish.

All afternoon, several petrels were in our wake; they were generally in pairs.

10.55 Hours. A Common Swallow (*Hirundo rustica*) circled over the ship, several times, and then made off southwards, mounting high into the sky.

18.00 Hours. Several petrels were in our wake—the number varying from 2 to 6; they keep more or less in pairs but a little distance away from the ship one pair was slightly smaller and darker than the others, with more pointed wings and feet not projecting beyond the tail (which appears squarish or very slightly forked). They may be Storm Petrels (*Hydrobates pelagicus*) which, I believe, occur in these waters; remainder appear to be the common Wilson's Petrel (*Oceanites oceanicus*).

June 29, Friday. Red Sea. Lat. 17° 57' N. Long. 40° 03' E.

Sea moderate; fresh breeze from N.W.; sunny but hazy owing to dust.

At sunrise, about 05.45 Hours, 30 to 40 petrels in our wake.

06.15 Hours, 3 Brown-winged Terns (*Sterna anaetheta fuligula*) passed by, flying N.W.

At 09.00 Hours I spent a long time, very carefully observing the 30 to 40 petrels flying in our wake. They all appeared to be Wilson's. Coloured above, dark sooty brownish black, with lighter markings across wings; markings can be seen only in a good light; large white rump; tail appears very slightly forked, but may be square (not easy to determine with birds in flight); feet appear black; they project nearly $\frac{1}{2}$ inch beyond tip of tail; underparts dark sooty brown.

At 11.15 Hours there were still about 10 to 20 of these petrels in our wake; from 09.00 to about 11.00 hours the maximum number was about 50. Do any petrels nest on Red Sea islands—or are they all migratory?

During morning several small flocks of Brown-winged Terns were passed flying N.W. No other birds were seen.

At Midday it was very hot and muggy, with a following wind and much dust haze; visibility was reduced to about $1\frac{1}{2}$ miles; temperature was over 95°.

16.05 Hours. A Tropic Bird appeared some distance away; it was probably either *Phaethon rubricauda* or *P. lepturus*.

Between 16.00 and 17.00 Hours we passed 8 Brown-winged Terns, 1, 2, 3 and 4; 4 were standing on two small bits of plankton, floating past the ship. Many petrels are still in our wake.

18.15 Hours. Another Common Swallow (*Hirundo rustica*) flew close over the ship and disappeared astern; it was flying N. or N.W. Now 40 to 50 petrels are in our wake, feeding on the refuse thrown over from the ship.

19.30 Hours. A small party of Brown-winged Terns settled in our wake; the head is partially black but the forehead is white; the beak black and the wing lining is whitish. The petrels remained in our wake until it became too dark to see them any longer.

June 30, Saturday. Red Sea. Lat. 14° 24' N. Long. 42° 34' E.

Sea calm; light breeze, variable; bright and sunny; dust storm has abated and visibility has improved to 3 to 4 miles.

05.20 Hours. Between dawn and sunrise, one gull and six petrels were in our wake; the gull is plain, sooty brown, with greenish beak; an immature Aden Sooty Gull (*Larus hemprichi*), I think—not an Egyptian Brown Gull (*L. leucophthalmus*) but the tail completely white. The petrels are all Wilson's (*O. oceanicus*).

06.00 to 06.15 Hours. Three Brown-winged Terns (*S. a. fuligula*) and two smallish white terns, with grey mantles—very like the Roseate Tern (*Sterna dougalli korustes*) passed nearby. Also saw one shearwater and an immature gull—probably a young Lesser Black-backed Gull; in colour it was mottled brown and white above, dirty white on underparts, head and neck greyish white, tail white with black tip. The shearwater was brown above, whitish

below; it flew close above the water, flapping and gliding, (not flying like a Mediterranean Shearwater (*P. k. kuhlii*)—possibly a Wedge-tailed Shearwater (*P. pacificus*).

06.15 to 06.30 *Hours*. Passed a string of 9 and several single Masked Boobies, all heading S.W.; all were dark chocolate brown above with belly white; head and neck dark chocolate brown; primaries and tail blackish; all in immature plumage except one which was in the mature, white plumage, with black flight feathers and tail; this is evidently the Red Sea Masked Booby or Gannet (*Sula dactylatra melanops*). Many medium sized terns passing, at some distance, generally in pairs, white except for light grey mantle and head with small black cap; beak orange yellow—the Lesser Crested Tern (*Thalasseus b. bengalensis*) by the look of them, but I cannot be certain, nor do I know whether this tern breeds in the Red Sea. An Aden Sooty Gull (*Larus hemprichi*) has just appeared, following our wake. It is somewhat like the Brown Gull (*Larus leucophthalmus*) of Egypt, being predominantly sooty brown, but this bird has the head brown, not black, divided from the body by a narrow white collar; bill is bright greenish with a red spot towards the tip, divided from the green by black.

07.50 *Hours*. An adult Masked Booby (*S. d. melanops*) crossed our bows; bill is light-greenish; many terns (*S. b. bengalensis* ?) all round us but not very close. Boobies now very common, chiefly immature but a fair sprinkling of adults—ratio about 10 : 1. Four Brown Gulls close in our wake—immature with black-barred tails; mantle and body rather dirty, sooty brown with white underparts. We are now passing Zubair Islands. All Boobies flying away from them to fishing ground (presumably). Presumably this species nests on these Islands; 2 or 3 petrels still following our wake.

Soon after 08.00 *Hours*, after passing the last of the Zubair Group a party of 12 or more Aden Sooty Gulls (*L. hemprichi*) flew out to us and followed our wake; very tame, flying close over stern; all but one immature, but some in more advanced plumage than others.

08.45 to 09.00 *Hours*. Nine Sooty Gulls and 7 or 8 petrels feeding together, in our wake, on refuse thrown overboard. Both species alighting on water to scramble for food. One Brown-winged Tern (*S. a. fuligula*) and 3 Indian Lesser Crested Sea Terns (*Thalasseus b. bengalensis* ?) flying past. Boobies have all disappeared.

10.45 *Hours*. Passed large shoal of large mackerel (sp.) leaping out of water after small fish. Above the shoal were 20 to 30 medium sized terns (*T. b. bengalensis*?) and an immature Sooty Gull. Later terns settled down, on the water, in a small compact flock. Now 6 Sooty Gulls (*L. hemprichi*) are in our wake, 4 adults and 2 immature and also several petrels.

11.00 *Hours*. All gulls gone. They settled on water and were left behind; does this gull nest on the Zubair Group? Six petrels still in our wake.

11.25 *Hours*. Tropic Bird, flew away from ship; appeared pure white with long white tail feathers—so was probably the White Tropic Bird (*Phaethon l. lepturus*).

11.45 *Hours*. Three petrels and one Sooty Gull in our wake.

11.50 *Hours*. Another shoal of large mackerel (sp.) leaping after small fish. Above were 4 Brown-winged Terns and 2 terns that looked like the Gull-billed Tern (*Gelochelidon n. nilotica*) but they may have been the White-cheeked Tern (*Sterna repressa*); white except for mantle (rather slate-grey) and head with black cap, beak blackish.

12.30 *Hours*. About 12 Sooty Gulls circling ship in our wake with 6 petrels. A few Brown-winged and Lesser Crested Terns passing occasionally.

Between 13.30 and 14.00 *Hours*. While passing Gebel Zuqab at less than one mile, large numbers of Sooty Gulls joined us, many settling on boats, masts and upper structure; 8 petrels in our wake; many boobies, all in immature brown plumage, flying about and settling on water. Several Brown-winged Terns near the Island. Later, large flocks of Brown-winged Terns passed, with one adult booby and a number of Lesser Crested Terns (?).

In one large flock of Brown-winged Terns were 4 sooty-brown birds of considerably heavier build and larger size; they appeared brown or grey-brown both on underparts as well as upper; they seemed to be shearwaters of some species—possibly the Wedge-tailed or Green-billed Shearwater (*Puffinus pacificus*

hamiltonii) which is, as far as I am aware, the only shearwater likely to be seen in these waters, in any numbers.

15.45 *Hours*. Tropic bird, with red-bill and long white tail feathers flew close about our bows, giving an excellent view—definitely the White Tropic Bird (*P. l. lepturus*); a beautiful bird.

Shortly afterwards passed several large concourses of sea-birds, following shoals of small fish; several boobies, many Sooty Gulls, great numbers of Brown-winged Terns and the orange-billed terns which, I think, are the Lesser Crested Sea Terns (*T. b. bengalensis*). Amongst the terns were a number of the sooty-brown birds that appear to be shearwater; they are dusky or sooty-brown all over; tail is rather long and pointed, wedge-shaped, I think; beaks long and fairly stout; I presume that they must be the Wedge-tailed or Green-billed Shearwater (*P. pacificus hamiltonii*). Do these shearwaters breed in the islands in the vicinity or do they migrate, breeding in winter in the Southern Hemisphere? There were 30 to 40 of them in this flock. Many Sooty Gulls continue to accompany us, settling all over our upper structure; very tame. Many petrels in our wake.

July 1, *Sunday*. Gulf of Aden—Aden at midday.

Moderate sea; slight breeze from N.W.; bright; clear and sunny.

05.45 *Hours*. Before sunrise, while still about 28 miles from Aden, many petrels in wake and flying over surrounding sea, all seemed to me Wilson's (*O. oceanicus*); no Sooty Gulls; tropic bird, flying high and very rapidly; also single shearwater, moderate in size, dusky brown above and below, wheeling over water—presumably *P. pacificus hamiltonii*.

06.30 *Hours*. Common Swallow (*Hirundo rustica*) flew close round ship; last seen mounting high skywards, towards land about 20 miles away port-side. What is a swallow doing here at this time of the year?

06.50 *Hours*. Five Sooty Gulls joined us, 4 immature, one adult; settled on water. Entering Aden roadstead, several Large-crested Sea Terns (*Thalasseus bergii velox*) passed. Petrels accompanied us in amongst other ships anchored in outer harbour and remained feeding, like gulls, on refuse thrown overboard. Comparatively few gulls, in harbour—very different to last March. No Black-headed Gulls (*L. ridibundus*) now, but small numbers of Sooty Gulls (*L. hemprichi*) flying in all directions; majority in immature plumage; also several large gulls in immature plumage (probably *L. fuscus*) and a single Black-backed Gull (*Larus fuscus*) in full adult but noticeably worn plumage.

In distance many terns, chiefly Large Crested Sea Terns (*T. bergii velox*) and (I think) Lesser Crested Terns (*T. b. bengalensis*); also a single Masked Booby (*S. d. melanops*), in adult plumage, near one of the mooring buoys.

12.00 *Hours*. Leaving Aden a medium sized dusky brown shearwater (*P. pacificus hamiltonii*) I think, crossed our stern.

Between 15.30 and 16.00 *Hours* many pairs of Large Crested Sea Terns (*T. bergii velox*) and Lesser Crested Terns (*T. b. bengalensis*?) flying past, also many petrels (*O. oceanicus*) flying in our wake.

16.50 *Hours*. Large flock of Brown-winged Terns (*S. a. fuligula*) fishing at a little distance from the ship, together with a few Large Crested Sea Terns and one Tropic-bird (sp. uncertain). Tropic bird was observed to dive into water. Also many petrels (Wilson's) in our wake, wheeling over surrounding seas.

17.10 *Hours*. Common Swallow—(♂) (*Hirundo rustica*) settled on foremast stay, then circled up and disappeared astern. We are now roughly 300 miles from Arabian Coast. Wind S.S.E. a moderate breeze; later swallow re-appeared and remained with us until after 18.45 hours, when it finally left. Surely it is unusual to find swallows (*H. rustica*) in these waters at this time of the year?

18.15 *Hours*. Many petrels still in our wake; some Brown-winged Terns passing; petrels remained with us until after dark when it became too dark to see them longer.

July 2, *Monday*. Gulf of Aden. Lat. 12°37' N. Long. 49°22' E.

Slight swell; very light breeze from N.E. to S.E.; bright, clear and hot.

05.30 to 07.30 *Hours*. Many petrels in our wake and skimming over swell;

all Wilson's (*O. oceanicus*); several flocks and many pairs of Brown-winged Terns, fishing and flying in various directions.

07.30 *Hours*. Several medium sized shearwaters, wheeling low over water in various directions; uniform dusky-brown above and below—evidently Wedge-tailed or Green-billed Shearwaters (*P. pacificus hamiltonii*); one Tropic-bird (sp. uncertain) flying high and plunging down, fishing, near flock of Brown-winged Terns.

During morning, many petrels, a number of Brown-winged Terns and several shearwaters flew past mostly at some distance.

All petrels still continue to be Wilson's Petrel (*O. oceanicus*) as far as can be seen. There must be many thousands of this species in these waters and in the North Atlantic. I had not before realised what a common bird this petrel is.

Afternoon. Very many petrels still in our wake and scattered over surrounding sea; 30 to 40 always following us. One shearwater (*P. pacificus hamiltonii*); one Tropic bird flew away at our approach and settled again; tail shorter than in White Tropic bird (*P. l. lepturus*) seen in Red Sea and back barred black, evidently the Short-tailed Tropic-bird (*Phaethon indicus*). Several more shearwaters (*P. pacificus hamiltonii*); two Brown-winged Terns and one rather large tern, with light grey mantle and yellow beak (sp. uncertain). Many petrels still in our wake.

17.30 *Hours*. Two more Short-tailed Tropic birds (*Phaethon indicus*) crossed our bows, giving us a good view of them.

18.15 *Hours*. Passed large and noisy concourse of sea birds, following large shoal of small fish. Large mackerel (sp.) also chasing the same shoal and a school of porpoises and/or dolphins appeared to be chasing the mackerel; sea birds, chiefly Brown-winged Terns (*S. anaetheta fuligula*) a single Masked Booby and several shearwaters—all *P. pacificus hamiltonii*, uniformly dusky above and below.

July 3, *Tuesday*. Arabian Sea. Lat. 13°37' N. Long. 53°37' E.

About 40 miles N. of Socotra. Stiff breeze from S; sea rough, heavy monsoon swell; bright and sunny; visibility moderate.

06.00 *Hours*. Two (pair ?) Short-tailed Tropic-birds circled close to ship; excellent view; disappeared south.

08.30 to 09.15 *Hours*. One Tropic-bird, in distance. One (possibly two) Wilson's Petrels crossing bows; no petrels in wake. Three or four Green-billed Shearwaters (*P. pacificus hamiltonii*) wheeling over swell, occasionally close to ship.

This morning a new species of shearwater has appeared; very similar in size and colour to the Small Shearwater (*P. puffinus*) which we saw in the Western Mediterranean; this bird is rather small in size, lightish brown above and whitish below; it flew more rapidly and with less sailing and wheeling than the much larger Green-billed species. We are now about 40 to 50 miles N.W. of Socotra, so I imagine that this small shearwater must be connected with this Island. Five or six of them were passed this morning, none close. I think they must be the local race of the Dusky Shearwater (*Puffinus assimilis bailloni*). No other birds were seen until 11.55 hours when a single Green-billed Shearwater passed.

Between 17.30 and 19.00 *Hours*, when dusk set in, there were a few Green-billed Shearwaters, flying low over the waves, but no other birds; petrels were conspicuous by their absence.

July 4, *Wednesday*. Arabian Sea. Lat. 15°45' N. Long. 57°17' E.

Roughly 200 miles S. E. of Arabian coast; swell heavy but moderating; strong monsoon wind from S.W.; morning dull; visibility fair; later, bright and sunny.

06.00 to 08.00 *Hours*. Passed several dark-coloured shearwaters; all presumably Green-billed (*P. pacificus hamiltonii*); one settled on the water; these shearwaters have rather long, squarish tails.

08.30 to 11.00 *Hours*. Passed one Tropic-bird (*P. indicus*) and several petrels (*O. oceanicus*) flying low over the swell; none in wake. Many shear-

waters, generally solitary or in pairs, but one gathering of upwards of 12, passed at 10.45 hours. In this group, majority were settled on water although it is still rather rough, others were flying on overhead, settling and getting up again.

14.30 to 15.00 Hours. In addition to numerous shearwaters passed a Short-tailed Tropic-bird and 5 (2, 1, 1, 1) Masked Boobies, all in adult plumage, fishing by diving vertically from a height and disappearing completely under water. Some shearwaters appeared rather larger than others; one large one, passing close, could be seen to have flesh-coloured feet. Does the Pink-footed Shearwater (*P. carneipes*) ever come as far as west as this?

15.30 Hours. Passed another large concourse of sea birds close to starboard, chasing a shoal of small fish which was also being chased by large mackerel (sp.); 40 to 50 Green-billed Shearwaters, with which were a few of the slightly larger species which appeared also slightly lighter brown; there were also a pair of Brown-winged Terns and a pair of small shearwaters not seen before. These two shearwaters were strikingly black and white, very like the Manx Shearwater (*Puffinus puffinus*) in size and colour, the dark blackish upper parts contrasting very vividly with the white of the underparts; they were flying with the other shearwaters but kept together. We are now running roughly 225 to 250 miles from the Arabian coast. I think these must be the Persian Shearwater (*Puffinus persicus*), which answers to this description.

16.05 Hours. Two petrels (*O. oceanicus*) following our wake; passed three other birds—petrels or very small shearwaters—that are new to me, flying more or less together, close above the waves, at a little distance from the ship; somewhat like shearwaters of the *Puffinus puffinus* group but, while underparts are white or whitish, mantle and upperparts generally are grey, with blackish primaries. They appeared to be either very small shearwaters or more probably petrels of some species.

Shortly afterwards, we passed another of the same species and also numerous Green-billed Shearwaters.

Between 16.45 and 17.00 Hours passed three Short-tailed Tropic-birds (*P. indicus*) one of which sat on the water until we were quite close to it; as it rose and flew off, it gave us a splendid view; numerous Green-billed Shearwaters still present together with one or two petrels.

17.30 Hours. Another Tropic-bird (*P. indicus*) passed, but shearwaters are now becoming very scarce as evening closes in; sea has moderated and it is now bright and sunny with good visibility; breeze is strong from S.W.

July 5, Thursday. Arabian Sea. Lat. 18°29' N. Long. 60°25' E.

Roughly 200 miles from Arabian coast; swell moderate; breeze moderate from S. W.; bright and sunny; visibility good.

This morning we have passed into the territory of another species of petrel.

Between 06.00 and 07.00 Hours, saw 15 of them, either singly or in pairs, flying close over the waves like Wilson's Petrels, mostly at a little distance from ship. They are very similar in size to, but possibly a trifle smaller than, Wilson's Petrel (*O. oceanicus*) and, like that bird, are sooty blackish-brown above with a white rump; but the indistinct pattern in the wings is less distinct in this species; the belly and abdomen are white and there is also a white lining to the wings; feet appear to be black and about the same length or possibly a trifle longer than the tail; tail is square or possibly very slightly forked. I have not met this petrel before but it seems to be common in these waters. The only petrel mentioned by Stuart Baker in the *Fauna of British India, Birds*, Vol. VI, which it might be is the Dusky-vented Petrel (*Fregatta tropica melanogastra*).

Many Green-billed Shearwaters are still present—but no other shearwaters.

At 06.40 Hours, passed a large concourse of these shearwaters (*P. p. hamiltonii*); more than I have ever seen together previously; there were well over 100 of them, either settled on the water or wheeling overhead, all in a large loose flock.

08.00 Hours, passed a lone gull; apparently a Sooty or Aden Gull (*L. hemprichii*) in immature plumage.

08.45 Hours. Three Short-tailed Tropic-birds (*P. indicus*) flew over and circled the ship for upwards of 5 minutes before dropping astern; they showed

themselves off very well; short tails were very noticeable. Shortly afterwards another pair passed, so this species of Tropic-bird seems fairly plentiful in this area. A number of Dusky-vented Petrels (?) and Green-billed Shearwaters were in evidence throughout the morning but not a great many of either species.

Between 15.00 and 16.15 Hours, passed 5 Dusky-vented Petrels (?), one of which flew to and fro across our wake for upwards of 5 minutes. Several Green-billed Shearwaters, one Short-tailed Tropic-bird and five Masked Boobies (*Sula dactylatra melanops*), all in adult plumage, two together and the remaining three solitary birds. Dusky-vented Petrels (*F. tropica melanogastra*?) still fairly numerous, often in pairs but generally singly. We are now roughly 150 miles from Arabian coast; swell continues; with bright and moderately sunny sky.

16.20 Hours, passed 4 Dusky-vented Petrels (?) flying more or less together; Green-billed Shearwaters are becoming scarcer as we travel further north—possibly we are running out of their usual habitat.

From 17.30 to 20.00 Hours (dusk) passed one Short-tailed Tropic-bird, one Green-billed Shearwater and several (5 or 6) Dusky-vented Petrels (?).

July 6, Friday. Arabian Sea. Lat. $21^{\circ}23$ N. Long. $63^{\circ}42$ ~~E~~

Roughly 24 hours from Karachi; sea calm; swell moderate; light breeze from S.W.; fine, fairly clear but sky inclined to be overcast.

06.00 to 07.00 Hours. Bird-life very scarce, this early morning; no shearwaters; only one Dusky-vented Petrel (?) seen.

07.45 Hours. Two Short-tailed Tropic-birds appeared and circled the ship, near or far, for nearly 15 minutes, before dropping astern.

09.00 Hours. Masked Booby, flying N.E., overtook ship. This bird appeared to have more white on it, than usual, especially about the tail; tail coverts were white and only the ends of the tail feathers were black, like the primaries; bill was bluish.

09.40 Hours. Solitary Green-billed Shearwater crossed our bows; shortly afterwards a single Dusky-vented Petrel (?) appeared. Later two more Dusky-vented Petrels (?) were passed, but there are not so many of these petrels about today as there were yesterday.

10.55 Hours. Pair of Short-tailed Tropic-birds flew over ship, calling loudly to one another, and then circled ship for 10 minutes or more. Call is monosyllabic and rather finch-like—not the type of cry one would expect from a bird like the Tropic-bird.

13.45 Hours. Two Green-billed Shearwaters and several petrels round bows; two of petrels were definitely the species that I have called Dusky-vented (*F. t. melanogastra*) and one was definitely a Wilson's (*O. oceanicus*) while another was also, I think, of this species. The fifth was a slightly larger, grey petrel, of the same species recorded as having been seen at 16.05 hours on 4th July. This one was closer and could be seen much better; the underparts were white, like the Dusky-vented Petrels close to which it was flying, but the upper parts were mottled bluish grey, with dark primaries; head and hind neck were lighter grey; rump was pale grey or whitish and tail was blackish; feet were slightly longer than the tail. I think that this bird (and those seen on the 4th July) must be the White-faced Storm or Frigate Petrel (*Pelagodroma marina*) which is known to occur further south in the Indian Ocean.

13.30 to 15.00 Hours. Exceptionally few birds passed; only three Dusky-vented (*F. t. melanogastra* ?) and one Wilson's (*O. oceanicus*) noted.

After 15.00 Hours more birds appeared. Two Green-billed Shearwaters, crossed our bows, followed by several petrels of which one was a Wilson's and 3 or 4 were Dusky-vented (?). Then three more White-faced Petrels (*Pelagodroma marina*) appeared flying together to starboard. They are attractive little petrels with, as far as one could see, flight and habits at sea similar to those of Wilson's, with the exception that they flew straighter and more purposefully.

15.40 Hours. A Masked Booby and a solitary Short-tailed Tropic-bird circled the ship, widely, flying more or less in company. For some days we have had a small number of butterflies, moths and locusts with us. They

came aboard when we were in the Gulf of Aden and are still with us, though the number of locusts (some pink and others yellow) has diminished. The locusts came aboard chiefly (if not entirely) at night.

16.00 Hours. Two Masked Boobies and one Tropic-bird flying in our wake.

16.10 Hours. A single Masked Booby came floating past, standing on a plank; it took to flight as it came amidships and circled round. All the boobies seen, during the last few days, have been in fully adult plumage. Several petrels both Wilson's and Dusky-vented (?) crossed our bows between 16.00 and 17.00 hours.

17.45 to 19.00 Hours. Three Green-billed Shearwaters and one Short-tailed Tropic-bird passed, all flying singly. The Mekran coast is now about 200 miles away.

July 7, Saturday. Arabian Sea. Lat. $24^{\circ}47'$ N. Long. $66^{\circ}32'$ W.

Approaching Mekran coast and Karachi. Sea much calmer; slight swell; slight ripple from light breeze, from S.E.; sky overcast and cloudy, early morning, brighter later; warm and muggy.

05.30 to 06.00 Hours. Roughly 70 miles from coast; Green-billed Shearwaters, very numerous; passed several hundreds, mostly flying but one flock of 12 and another 7 were resting, on the water, in compact groups.

As soon as the birds in these flocks took wing, they scattered and flew away singly or in pairs; they did not fly in flocks, but seemed to like to rest in these formations. Petrels still numerous, but now all appear to be Wilson's; we passed upwards of 50 in half an hour, mostly flying singly or in pairs, but at one time there were seven skimming the water, close together.

Soon after 06.00 Hours, two Masked Boobies sailed up from astern, overtook and inspected the ship and then dropped back again.

06.15 Hours. A large skua (?) crossed our bows, at a little distance and proceeded on its course; it was a little larger and more heavily built than the Green-billed Shearwaters; dusky-brown above (like that shearwater but of a rather lighter ashy brown) below whitish, not pure white but the brown of the sides fading into dirty white. I take this bird to be Richardson's Skua (*Stercorarius parasiticus*) but it is surprising that one should be in those waters early in July; presumably it was a non-breeding bird that had remained behind in its winter habitat.

Between 06.00 and 06.45 Hours. Green-billed Shearwaters and Wilson's Petrels continued to be numerous—but not as plentiful as they were earlier in the morning. After 06.45 Hours only an occasional shearwater and petrel was seen.

At 07.00 Hours, a small shearwater crossed our bows, flying rapidly close above the water with quick wing beats and short glides. It was blackish brown above and white beneath and was, I believe, another Persian Shearwater (*Puffinus persicus*).

07.45 Hours. Another Masked Booby flew up, inspected the ship and dropped astern; a few Wilson's Petrels are still flying around.

Between 08.30 and 09.05 Hours only one or two Wilson's Petrels were observed; other birds had disappeared.

At 09.30 Hours an empty oil-drum was thrown over and floated away astern. This intrigued a Masked Booby, which flew up and inspected it for some minutes; then settled beside it and eventually flew up and settled on it and drifted away, out of sight, astern. The Masked Booby seems to be full of curiosity.

Until 11.50 Hours, saw no further birds, with the exception of 4 or 5 Wilson's Petrels, which flew to and fro across our wake for over an hour. Land appeared, in a dust haze, about 11.45 hours but could not be seen properly until we were passing within 15 miles of Monze Point. Bird-life was noticeably absent while we were coasting towards Karachi. Only one Wilson's Petrel was observed until 13.10 hours when we passed two Sooty Gulls (*L. hemprichii*) on the water; they flew away astern.

At 13.15 Hours, when Karachi, had just become easily distinguishable through the dust haze, a pair of Large Crested Sea Terns flew by, close to the ship, and three smaller, greyish terns passed ahead of us. The Large Crested Sea Terns, in these waters, would be the local resident race, the

Mekran Large Crested Tern (*Thalasseus bergii bakeri*) but I could not identify the smaller grey terns. Immediately after seeing the terns, a single Wilson's Petrel, passed—the last to be seen on this voyage.

In Karachi Harbour Sooty Gulls (*Larus hemprichii*) were very numerous, so also were the Large Crested Sea Terns (*T. bergii bakeri*) and the Little Tern (*Sterna albifrons*) which, at this time of the year, would be the local breeding race *praetermissa*.

I was very interested to see, also, in this Harbour many Indian Reef-Herons (*Demigretta asha*) mostly in the slate-grey phase; they were comparatively tame and settled on the upper-works and rigging of the ships as well as beside the water; in the evening, they retired to a large clump of peepal trees in the dock area, where they appeared to be nesting. This is presumably the same colony as mentioned by Stuart Baker (page 353, Vol. VI, Birds) *Fauna of British India* Series.

In the evening, as we lay at anchor, flock after flock of hundreds (if not thousands) of Indian Shags (*Phalacrocorax fuscicollis*) with possibly some Indian Cormorants (*P. carbo sinensis*), passed close over our mast-tops on their way to their feeding grounds in the shallow lagoons on the opposite side of the harbour—a fitting finale to a most interesting voyage.

During the voyage, and while preparing this Diary for publication, frequent reference was made to the following books:—

<i>Birds of Canada</i>	...	...	By P. A. Taverner.
<i>Birds of the Ocean</i>	...	...	„ W. B. Alexander.
<i>Fauna of British India. Birds</i>	...	...	„ E. C. Stuart Baker.
<i>Handbook of British Birds</i>	...	...	„ Witherby and others.

REPTILES OF COCANADA.

BY

GARTH UNDERWOOD.

(With two graphs.)

The terrain consisted of a coastal strip of sand two to three miles in width. The water level was never more than about ten feet below the surface. Palms and cacti composed the principal vegetation, with patches of sparse grass. Inland was a zone of paddy fields; the mud was copious and vegetation plentiful.

The reptiles examined were collected with the aid of the local villagers and came, as far as is known, wholly from the two types of country described. The accounts of the species encountered are given in so far as they supplement or contradict the accounts given by Smith in *The Fauna of British India*, (Reptilia), 2nd Ed. Dimensions are all in millimetres.

The following abbreviations are used to reduce the bulk of the account:—

Temporals 2+2 and 2+3, 8 spp., means that 8 specimens were examined having 2+2 temporals on one side of the head, and 2+3 on the other side. Owing to the docked tails, the total lengths of snakes are not always comparable; the body and tail lengths are indicated separately thus:—

1,000 total length (b.750, t.250).

The ventral and subcaudal counts are indicated by V and C.